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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,451	09/08/2003	William P. Parker	B6603-0003	1455

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James Marc Leas
37 Butler Drive
S. Burlington, VT 05403

EXAMINER

JUBA JR, JOHN

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,451

Applicant(s)

PARKER ET AL.

Examiner

John Juba, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26,35,36,45-48 and 50-89 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-26,35,36,45-48 and 50-89 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Election/Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1 – 5, 70 – 76, 78, and 81, drawn to a method of making a holographic mask, classified in class 359, subclass 11.
- II. Claims 6 – 10, 77, 79, 84, and 89, drawn to a method of making a holographic mask, classified in class 359, subclass 20.
- III. Claims 11 – 15, 16 – 19, 80, 82, 83, 85, and 87, drawn to a method of making a holographic mask, classified in class 359, subclass 15.
- IV. Claims 57 - 69, drawn to a imparting an image to a workpiece, classified in class 359, subclass 12.
- V. Claims 50 -56, drawn to a method of providing an image, classified in class 359, subclass 32.
- VI. Claims 35 and 86, drawn to a method of patterning a workpiece, classified in class 359, subclass 33.
- VII. Claims 45, 47, and 88, drawn to an apparatus for patterning a workpiece, classified in class 359, subclass 33.

Claims 36 and 46 are improper multiply dependent claims and thus were not grouped. Should claims commensurate in scope with these claims be presented, then further restriction will be necessitated based upon the distinctness of the existing groups to be set forth below. Claim 48 was so indefinite for depending from a canceled claim, that appropriate grouping could not be determined.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II-III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different invention I begins with a non-opaque object mask that provides both object waves and undiffracted reference waves, and which thus has a different mode of operation from that claimed in inventions II-III, which begin with a substantially opaque object mask that generates object waves. It is believed that Invention I is not disclosed as useable to form a substantially opaque mask so as to be useable together with inventions II-III.

Should Applicant identify passages where Inventions I and II-IV are disclosed as useable together, then Inventions I and II-IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as in a single-step process of recording a holographic mask, wherein the mask so produced is useful for patterning a workpiece, rather than for forming a further mask. See MPEP § 806.05(d).

Inventions I and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP §

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806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 57 evidences that the combination is regarded as patentable without the details to the manner in which the in-line mask is recorded from an object mask. The subcombination has separate utility such as in exposing a photosensitive substrate with low-intensity radiation or in forming a further mask.

Inventions I and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 50 evidences that the combination is regarded as patentable without the details to the nature of the object mask used to record the interference pattern in the recording medium. The subcombination has separate utility such as forming a mask for forming a virtual image.

Inventions I and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 35 evidences that the combination is regarded patentable without the details to the subcombination such as

the object mask used in forming the holographic mask. The subcombination has separate utility such as in a holographic mask for forming a virtual image or for forming a real image directly on a workpiece without a lens.

Inventions I and VII are related as process of making and product (apparatus) made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product (apparatus) or (2) that the product (apparatus) as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a holographic mask formed by the process of Group II.

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as forming a holographic mask which is the final mask, rather than a mask used to form a further mask, or such a forming a mask where the in-focus image is to be used. See MPEP § 806.05(d).

Inventions II and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 57 evidences that the combination is regarded as patentable without the details to the manner in which the in-

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line mask is recorded from an object mask. The subcombination has separate utility such as in exposing a photosensitive substrate with low-intensity radiation or in forming a further mask.

Inventions II and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 50 evidences that the combination is regarded as patentable without the details to the nature of the object mask used to record the interference pattern in the recording medium. The subcombination has separate utility such as forming a mask for forming a virtual image.

Inventions II and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 50 evidences that the combination is regarded as patentable without the details to the nature of the object mask used to record the interference pattern in the recording medium. The subcombination has separate utility such as forming a mask for forming a virtual image.

Inventions II and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 35 evidences that the combination is regarded patentable without the details to the subcombination such as the object mask used in forming the holographic mask. The subcombination has separate utility such as in a holographic mask for forming a virtual image or for forming a real image directly on a workpiece without a lens.

Inventions II and VII are related as process of making and product (apparatus) made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product (apparatus) or (2) that the product (apparatus) as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a holographic mask formed by the process of Group II.

Inventions III and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 57 evidences that the

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combination is regarded as patentable without the details to the manner in which the in-line mask is recorded from an object mask. The subcombination has separate utility such as in exposing a photosensitive substrate with low-intensity radiation or in forming a further mask.

Inventions III and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 50 evidences that the combination is regarded as patentable without the details to the nature of the object mask used to record the interference pattern in the recording medium. The subcombination has separate utility such as forming a mask for forming a virtual image.

Inventions III and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 50 evidences that the combination is regarded as patentable without the details to the nature of the object mask used to record the interference pattern in the recording medium. The subcombination has separate utility such as forming a mask for forming a virtual image.

Inventions III and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 35 evidences that the combination is regarded patentable without the details to the subcombination such as the object mask used in forming the holographic mask. The subcombination has separate utility such as in a holographic mask for forming a virtual image or for forming a real image directly on a workpiece without a lens.

Inventions III and VII are related as process of making and product (apparatus) made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product (apparatus) or (2) that the product (apparatus) as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a holographic mask formed by the process of Group II.

Inventions IV and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 57 evidences that the

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combination is regarded as patentable without the details to the manner by which the in-line holographic mask is formed. The subcombination has separate utility such as forming a mask for low intensity imaging.

Inventions IV and VI are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention VI has separate utility such as patterning a workpiece without ablation by using an interferometrically recorded mask that has not been transferred into a durable substrate. See MPEP § 806.05(d).

Inventions IV and VII are related as process of making and product (apparatus) made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product (apparatus) or (2) that the product (apparatus) as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a holographic mask formed by the process of Group II without transfer of the mask into a durable substrate.

Inventions V and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because claim 35 evidences that the

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combination is regarded as patentable without the details to the manner by which the in-line holographic mask is formed and without the details as to where on the hologram the real image originates. The subcombination has separate utility such as in providing an image for machine authentication.

Inventions V and VII are related as process of making and product (apparatus) made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product (apparatus) or (2) that the product (apparatus) as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a computer generated holographic mask.

Inventions VI and VII are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, it appears that the two inventions are *not* distinct. Thus, if either invention VI or VII is elected, then *both* inventions will be examined.

At this juncture, it appears that no claim links the inventions.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Further Election of Species

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species A – phase-altering elements which are indentations on the object mask, to which claims 20/2, 20/7, 20/12, and 20/17 are directed;

Species B – phase-altering elements which are islands of transparent materials, to which claims 21/2, 21/7, 21/12, and 21/17 are directed;

Species C – [transparent elements which are] scattering elements, which are diffusers, to which claims 22/2, 22/7, 22/12, and 22/17 are directed;

Species D – [transparent elements which are] scattering elements with preferred directionality, to which claims 23/2, 23/7, 23/12, and 23/17 are directed;

Species E – [transparent elements which are] refracting elements which are lenslets, to which claims 24/2, 24/7, 24/12, and 24/17 are directed;

Species F – [transparent elements which are] diffracting elements which are grating, to which claims 25/2, 25/7, 25/12, and 25/17 are directed; and

Species G – [transparent elements which are] diffracting elements which are holograms, to which claims 26/2, 26/7, 26/12, and 26/17 are directed.

Should Applicants elect any of Groups I – III, Applicants are required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 2 is generic in Group I; claim 7 is generic in Group II, and claim 12 is generic in Group III.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Given the complexity of the groupings, and given that an Office action was due to be completed on an even date herewith, no telephone call was made to request an oral election to the above restriction requirement

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn can be reached on Mon.- Thu., 9 - 5.

The centralized fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for *all* communications.


JOHN JUBA, JR.
PRIMARY EXAMINER
Art Unit 2872

April 16, 2004